CLAIMS:

1. A method for image processing a digital multi-colour image, the method comprising the steps of:

generating from said digital multi-colour image, image signals for a selection of process colours, each image signal being associated with a digital separation image of a process colour of said selection of process colours and specifying for each pixel of said digital multi-colour image an image density value for the associated process colour; and

adding up, for each image part of said digital multi-colour image, the image density values of all said process colours of the pixels of the image part in order to determine for each said image part a total area coverage value (CT),

wherein, if the total area coverage value of an image part exceeds 100%, the method further comprises the following steps:

a) dividing image density values of pixels of the image part specified by the image signals, into first image density values associated with a first layer of image dots of marking particles and at least second image density values associated with a second and any following layer of image dots of marking particles such that the sum of said at least second image density values corresponds to an area coverage value equal to CT-100%, and

b) converting the image signals by using a matrix-dither technique into corresponding first printing signals and at least corresponding second printing signals, each printing signal indicating for each pixel of the image part whether an image dot of marking particles of the corresponding process colour is to be formed, said matrix-dither technique being such that each of the first printing signals is built up from a raster of a first two-dimensional matrix structure by thresholding said first image density values, while each of the second printing signals is built up from a raster of a second two-dimensional matrix structure different from said first two-dimensional matrix structure, by thresholding said second image density values.

2. The method as recited in claim 1, wherein at least two process colours have non-zero second image density values.

3. The method as recited in claim 2, further comprising the step of:

determining a first area coverage fraction of a first process colour of said at least two process colours based on the associated first image density values, and a second area coverage fraction of said first process colour based on the associated second image density values.

4. The method as recited in claim 3, further comprising the step of:

determining a first area coverage fraction of a second process colour of said at least two process colours based on the associated first image density values, and a second area coverage fraction of said second process colour based on the associated second image density values.

5. The method as recited in claim 4, wherein the dividing (a) is such that a ratio between the first area coverage fraction of the first process colour and the first area coverage fraction of the second process colour differs less than 5% from a ratio between the second area coverage fraction of the first process colour and the second area coverage fraction of the second process colour.

6. The method as recited in claim 1, wherein the dividing (a) is such that a pixel has only an associated non-zero second image density value if the sum of image density values associated with said pixel is greater than the maximum threshold value of said first matrix structure.

7. The method as recited in claim 6, further comprising the step of:

selecting at least one process colour which is rendered in the first layer only.

8. The method as recited in claim 1, further comprising the step of:

sorting the image density values associated with each pixel such that the process colours are ordered with decreasing contrast value.

9. The method as recited in claim 1, wherein the image part comprises a single pixel.

10. An image processing system for processing a digital multi-colour image, the system comprising:

a generation module for generating from said digital multi-colour image, image signals for a selection of process colours, each image signal being associated with a digital separation image of a process colour of said selection of process colours and specifying for each pixel of said digital multi-colour image an image density value for the associated process colour;

an analysis module for adding up, for each image part of said digital multi-colour image, the image density values of all said process colours of the pixels of the image part in order to determine for each said image part a total area coverage value (CT), and, if the total area coverage value of an image part exceeds 100%, for dividing image density values of pixels of the image part specified by the image signals, into first image density values

associated with a first layer of image dots of marking particles and at least second image density values associated with a second and any following layer of image dots of marking particles such that the sum of said at least second image density values corresponds to an area coverage value equal to CT-100%; and

a conversion module for converting, if CT exceeds 100%, the image signals by using a matrix-dither technique into corresponding first printing signals and at least corresponding second printing signals, each printing signal indicating for each pixel of the image part whether an image dot of marking particles of the corresponding process colour is to be formed, said matrix-dither technique being such that each of the first printing signals is built up from a raster of a first two-dimensional matrix structure by thresholding said first image density values, while each of the second printing signals is built up from a raster of a second two-dimensional matrix structure different from said first two-dimensional matrix structure, by thresholding said second image density values.

11. The image processing system as recited in claim 10, wherein at least two process colours have non-zero second image density values.

12. The image processing system as recited in claim 11, wherein the analysis module determines a first area coverage fraction of a first process colour of said at least two process colours based on the associated first image density values, and a second area coverage fraction of said first process colour based on the associated second image density values, and a first area coverage fraction of a second process colour of said at least two process colours based on the associated first image density values, and a second area coverage fraction of said second process colour based on the associated second image density values, wherein the dividing is such that a ratio between the first area coverage fraction of the first process colour and the first area coverage fraction of the second process colour differs less than 5% from a ratio between the second area coverage fraction of the first process colour and the second area coverage fraction of the second process colour.

13. The image processing system as recited in claim 10, wherein the analysis module divides such that a pixel has only an associated non-zero second image density value if the sum of image density values associated with said pixel is greater than the maximum threshold value of said first matrix structure.

14. The image processing system as recited in claim 13, wherein the generation module selects at least one process colour which is rendered in the first layer only.

15. The image processing system as recited in claim 10, wherein the image part comprises a single pixel.

16. A computer program product embodied on at least one computer-readable medium, for image processing a digital multi-colour image, the product comprising computer-executable instructions for:

generating from said digital multi-colour image, image signals for a selection of process colours, each image signal being associated with a digital separation image of a process colour of said selection of process colours and specifying for each pixel of said digital multi-colour image an image density value for the associated process colour; and

adding up, for each image part of said digital multi-colour image, the image density values of all said process colours of the pixels of the image part in order to determine for each said image part a total area coverage value (CT),

wherein, if the total area coverage value of an image part exceeds 100%, the product further comprising computer-executable instructions for:

(a) dividing image density values of pixels of the image part specified by the image signals, into first image density values associated with a first layer of image dots of marking particles and at least second image density values associated with a second and any following layer of image dots of marking particles such that the sum of said at least second image density values corresponds to an area coverage value equal to CT-100%, and

(b) converting the image signals by using a matrix-dither technique into corresponding first printing signals and at least corresponding second printing signals, each printing signal indicating for each pixel of the image part whether an image dot of marking particles of the corresponding process colour is to be formed, said matrix-dither technique being such that each of the first printing signals is built up from a raster of a first two-dimensional matrix structure by thresholding said first image density values, while each of the second printing signals is built up from a raster of a second two-dimensional matrix structure different from said first two-dimensional matrix structure, by thresholding said second image density values.

17. The computer program product as recited in claim 16, wherein at least two process colours have non-zero second image density values.

18. The computer program product as recited in claim 17, further comprising computer-executable instructions for:

determining a first area coverage fraction of a first process colour of said at least two process colours based on the associated first image density values, and a second area

coverage fraction of said first process colour based on the associated second image density values, and a first area coverage fraction of a second process colour of said at least two process colours based on the associated first image density values, and a second area coverage fraction of said second process colour based on the associated second image density values, wherein the dividing is such that a ratio between the first area coverage fraction of the first process colour and the first area coverage fraction of the second process colour differs less than 5% from a ratio between the second area coverage fraction of the first process colour and the second area coverage fraction of the second process colour.

19. The computer program product as recited in claim 16, wherein the dividing is such that a pixel has only an associated non-zero second image density value if the sum of image density values associated with said pixel is greater than the maximum threshold value of said first matrix structure.

20. The computer program product as recited in claim 16, further comprising computer-executable instructions for:

sorting the image density values associated with each pixel such that the process colours are ordered with decreasing contrast value.